



# April 2015 Water Supply Briefing

National Weather Service, Northwest River Forecast Center

Telephone Conference: 1-877-501-8577

Pass Code: 71967

Upcoming Briefing Dates:

May 7 2015 – 10 am PDT

June 2015 – ????

Presentation available after brief at:

[www.nwrfc.noaa.gov/presentations/presentations.cgi](http://www.nwrfc.noaa.gov/presentations/presentations.cgi)

Kevin Berghoff, NWRFC

W-ptr.Webmaster@noaa.gov

(503) 326-7291



# Northwest River Forecast Center

## Water Supply Forecasts



River and Hydrology

**Water Supply**

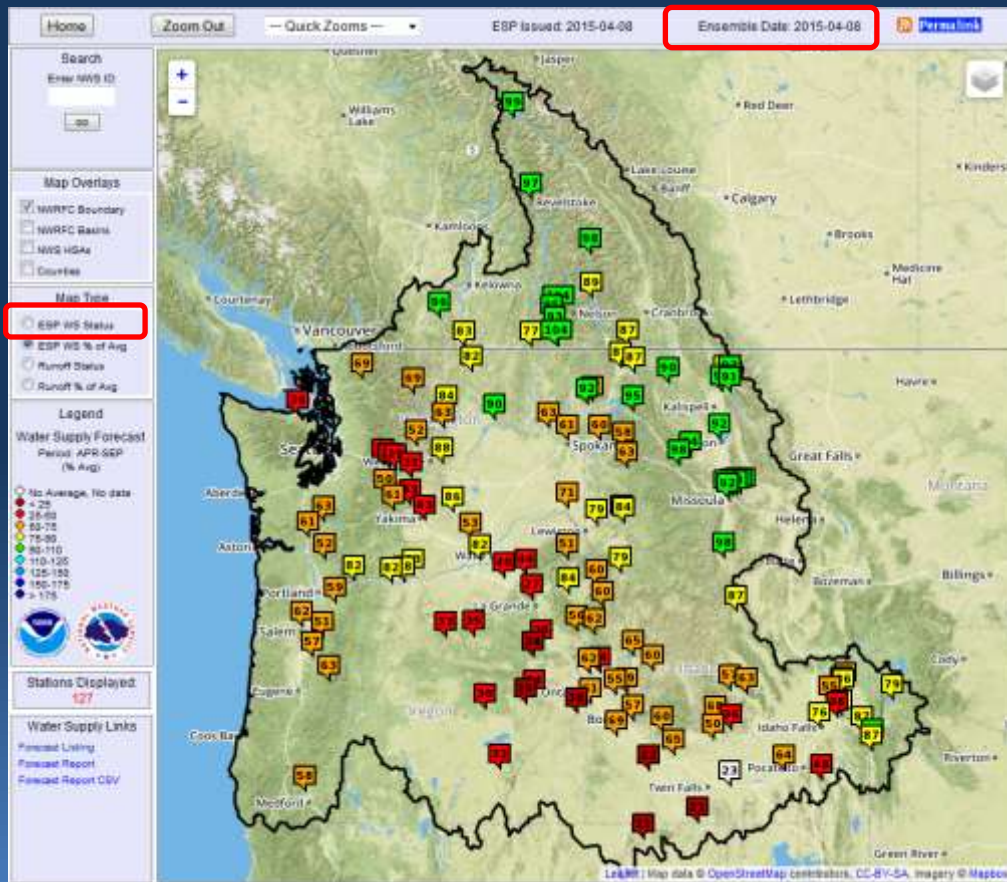
Observations

Weather Forecasts

Climate

NWRFC

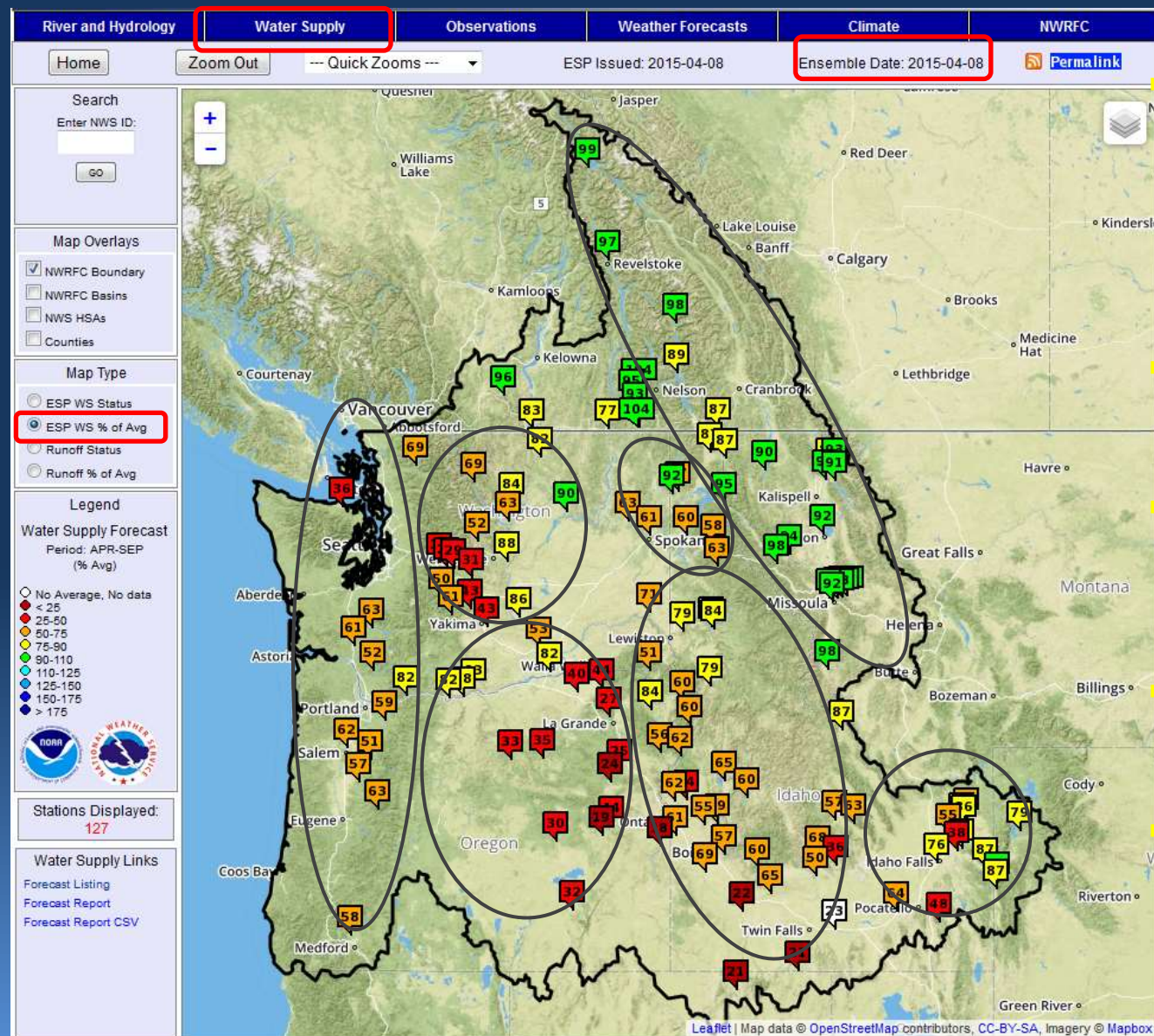
- **ESP: Ensemble Streamflow Prediction**
- Official ESP water supply products include:
  - 10 days of quantitative precipitation forecast (QPF)
  - 10 days of quantitative temperature forecast (QTF)
  - Historical observations appended thereafter
- NWRFC also offers 5 and 0 day QPF/QTF products
- Forecasts are updated daily
- Model states and observed runoff updated continuously
- Forecasts are compared to 30 year observed runoff normals (1981-2010)







# Water Supply Summary



## Upper Columbia:

- B.C. and W. Montana near to slightly below normal
- N. Idaho below normal

## Upper Snake:

- Below normal

## Middle/Lower Snake:

- Below to well below normal

## E. Washington/Oregon:

- Well below

## W. Washington/Oregon:

- Well below



# Water Supply Forecast Inputs

## ■ Observed Conditions:

- Precipitation
- Temperature
- Snowpack
- Runoff

Hydrologic  
model states

## ■ Future Conditions:

- 10 days of quantitative forecast precipitation (QPF)
- 10 days of quantitative forecast temperature (QTF)
- Historical observations appended thereafter

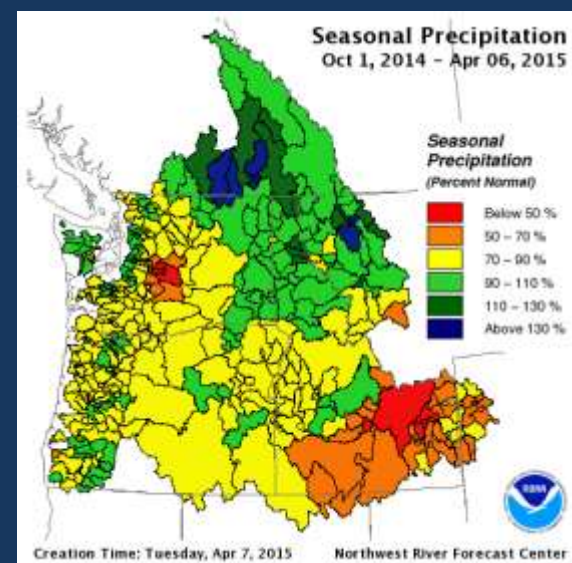
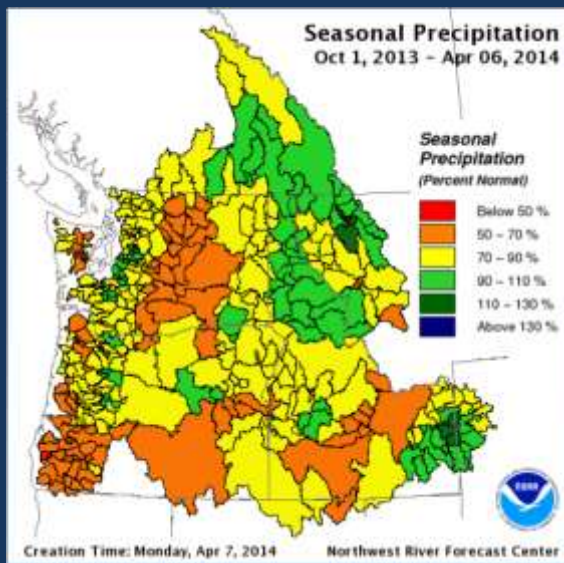




# Observed Seasonal Precipitation



River and Hydrology	Water Supply	Observed
Home	Forecast Map	
	Forecast Listing	
	Forecast Report	
	Forecast Text Product	
	Live Briefing Schedule	
	Precipitation/Temperature	
	Snow	
	Runoff	
	Runoff Text Product	
	ESP Natural Volumes	
	New ESP Natural Forecast <b>BETA</b>	
	ESP Interactive	
	Documentation	



## DIVISION NAME

Columbia River Basin above Grand Coulee Dam

Snake River Basin above Ice Harbor Dam

Middle Columbia Lower Tributaries

Columbia River Basin above The Dalles Dam

\*Western Washington

\*Western Oregon

\*Average of contributing divisions

WY 2014  
% NORM

WY 2015  
% NORM

WY 2015  
OBS

96

**109**

25 in

85

**80**

11 in

82

**82**

14 in

88

**91**

16 in

81

**87**

72 in

77

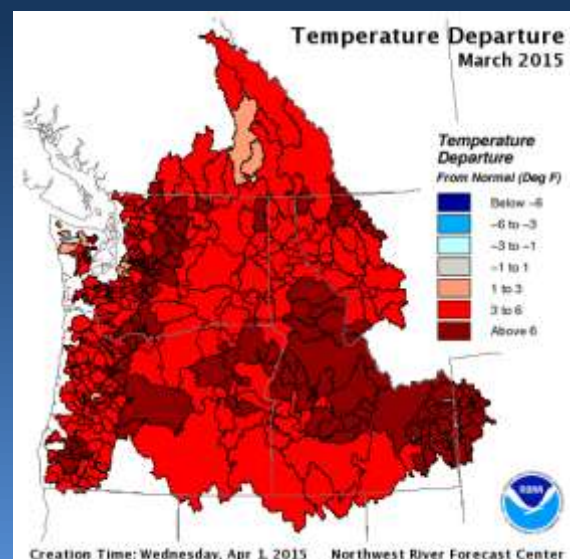
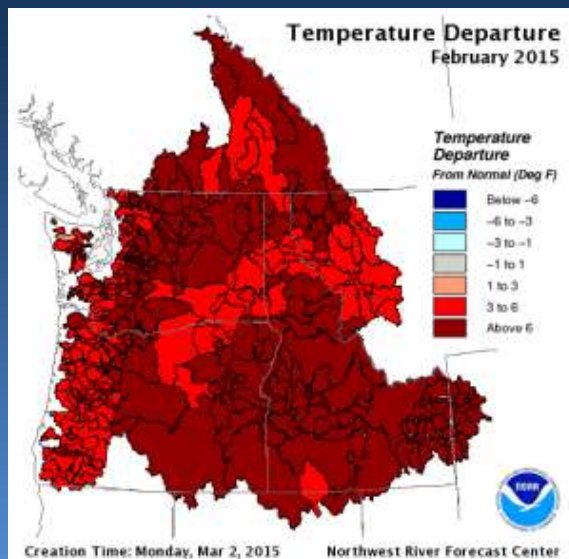
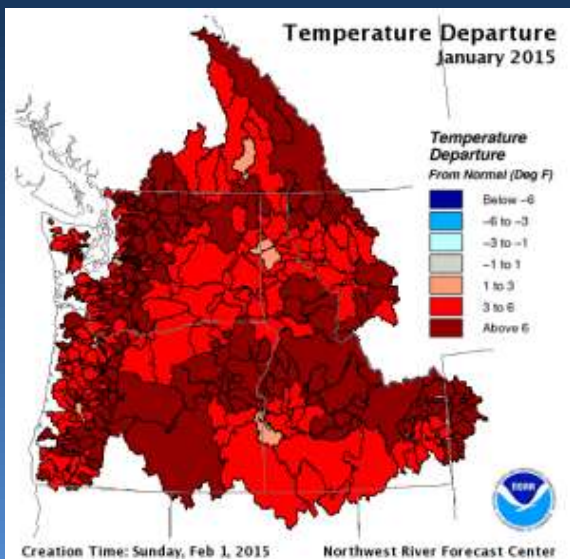
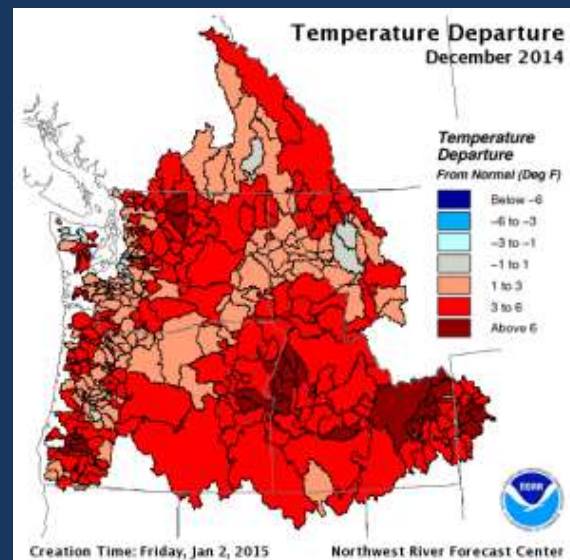
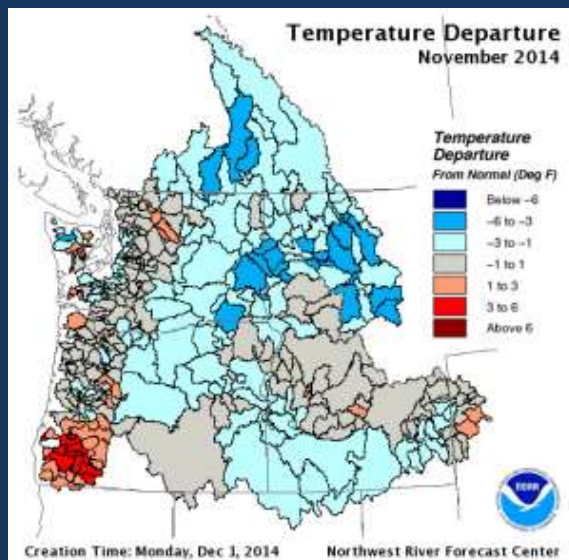
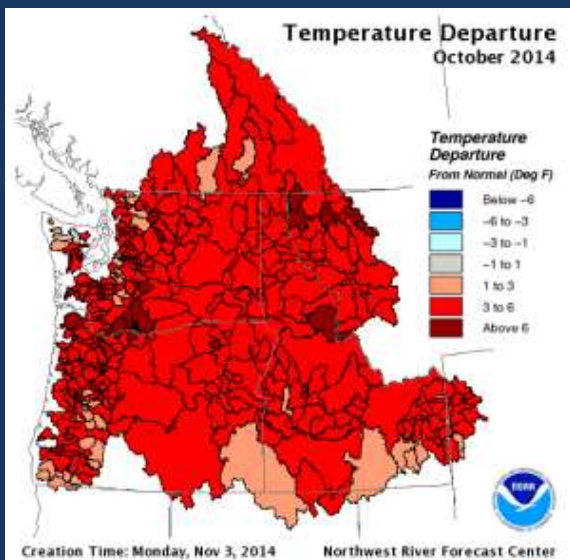
**84**

53 in

[www.nwrfc.noaa.gov/water\\_supply/wy\\_summary](http://www.nwrfc.noaa.gov/water_supply/wy_summary)

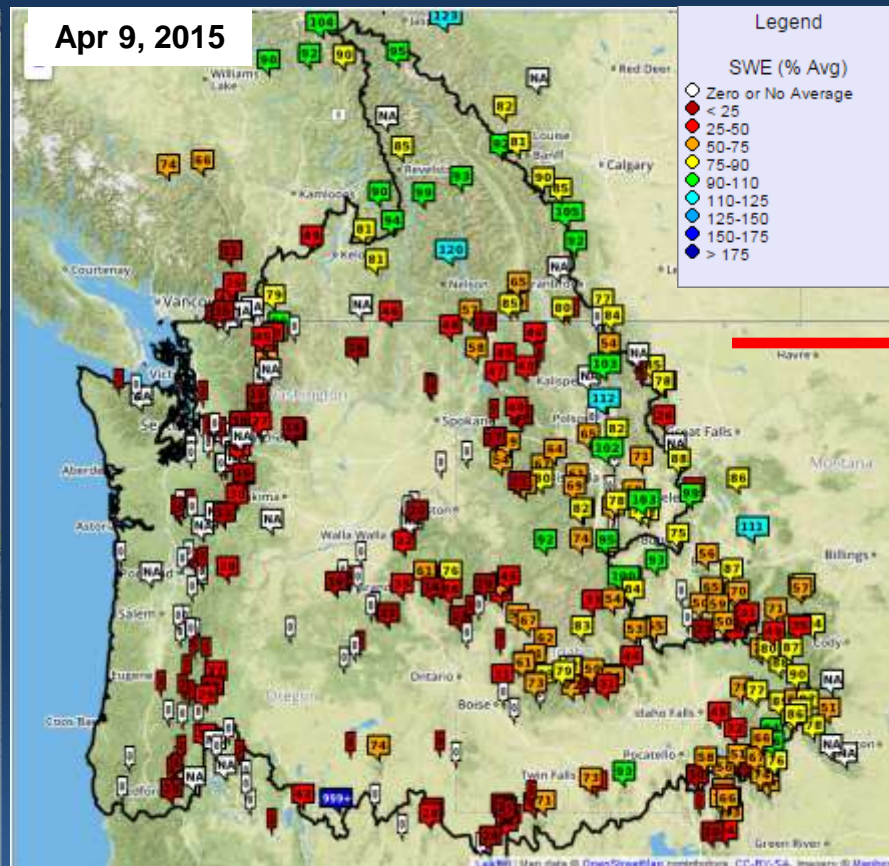
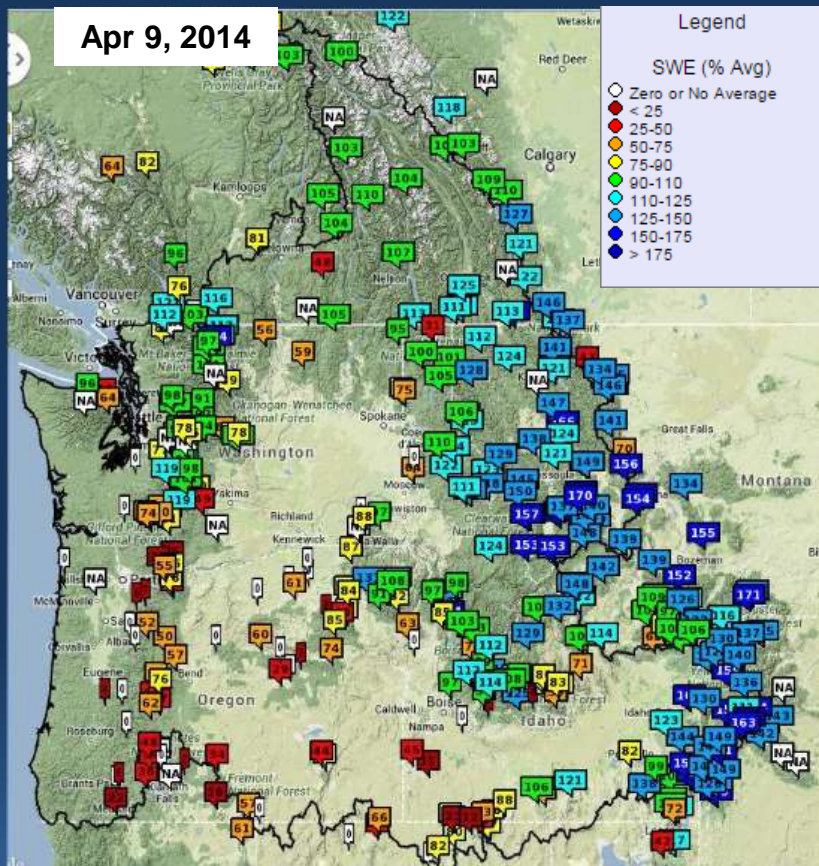


# Observed Seasonal Temperatures





# Observed Snowpack Conditions

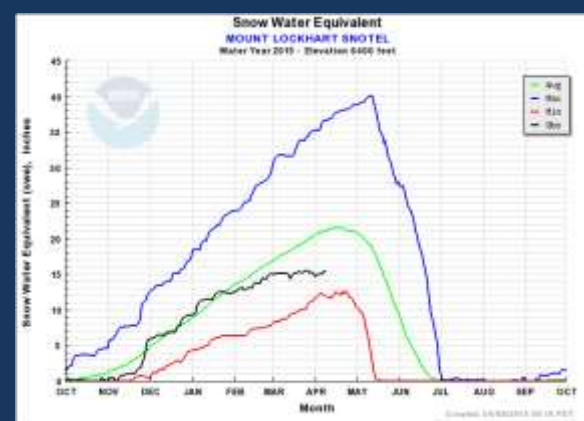
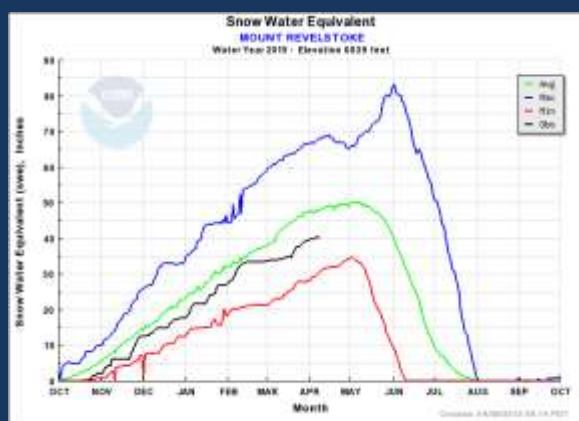


River and Hydrology	Water Supply	Observed
<input type="button" value="Home"/> Search by NWS ID: <input type="text"/> <input type="button" value="Go"/> Map Overlays: <input checked="" type="checkbox"/> NWRFC Boundary <input type="checkbox"/> NWRFC Casins <input type="checkbox"/> NWS HGA's <input type="checkbox"/> Counties Map Type: <input type="radio"/> SWE <input checked="" type="radio"/> Snow % of Avg <input type="radio"/> Seasonal Peak Status	<input type="button" value="Forecast Map"/> <input type="button" value="Forecast Listing"/> <input type="button" value="Forecast Report"/> <input type="button" value="Forecast Text Product"/> <input type="button" value="Live Briefing Schedule"/> <input type="button" value="Precipitation/Temperature"/> <input checked="" type="button" value="Snow"/> <input type="button" value="Runoff"/> <input type="button" value="Runoff Text Product"/> <input type="button" value="ESP Natural Volumes"/> <input type="button" value="New ESP Natural Forecast BETA"/> <input type="button" value="ESP Interactive"/> <input type="button" value="Documentation"/>	

- Observed snow water equivalent (SWE) values provided by:
  - Natural Resources Conservation Service (NRCS) SNOTEL network
  - Environment Canada (EC) Automated Snow Pillow network



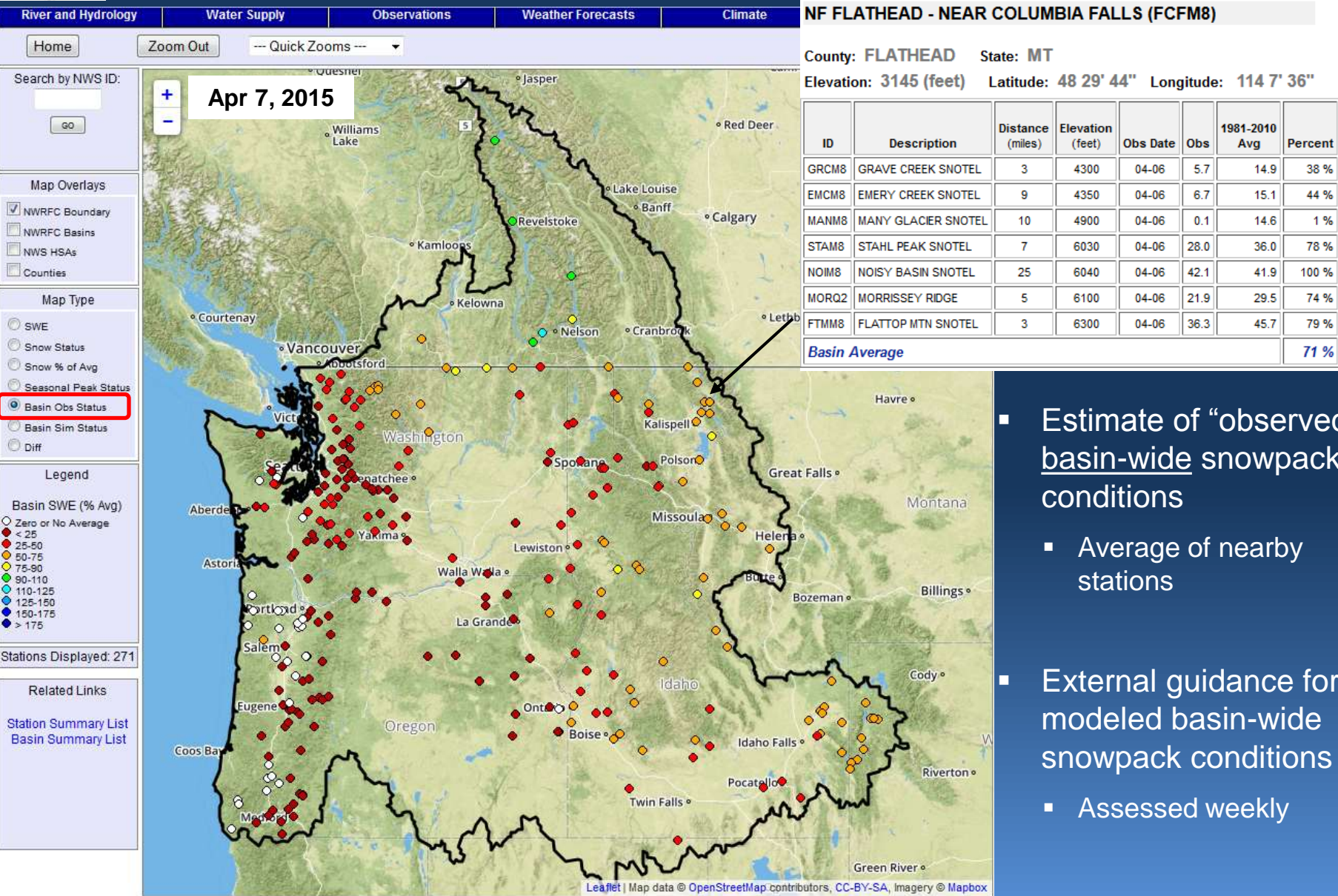
# Observed Snowpack Conditions



- Observed snow water equivalent (SWE) values provided by:
  - Natural Resources Conservation Service (NRCS) SNOTEL network
  - Environment Canada (EC) Automated Snow Pillow network



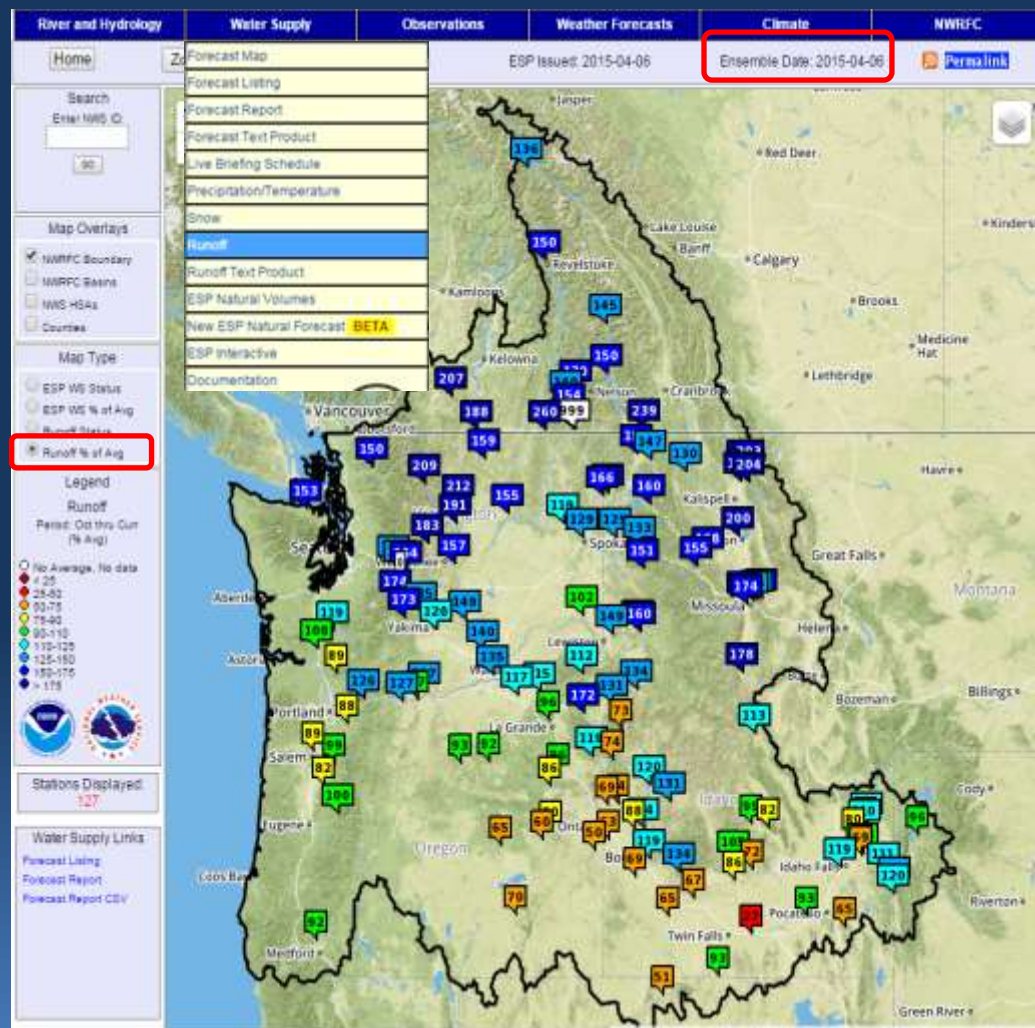
# "Observed" Snowpack Conditions



- Estimate of "observed" basin-wide snowpack conditions
  - Average of nearby stations
- External guidance for modeled basin-wide snowpack conditions
  - Assessed weekly



# \*Observed Runoff Conditions



LOCATION	OCT 1 – APR 6 % NORM	JAN 1 – APR 6 % NORM
Columbia River – Grand Coulee Dam	157	179
Clearwater River – Spalding	151	161
Snake River – Hells Canyon Dam	74	59
Yakima River – Kiona	141	129
John Day River – Service Creek	94	87
Columbia River – The Dalles Dam	128	139
Skagit River – Concrete	151	148
Dungeness River – Sequim	154	138
Willamette River – Salem	90	68
Rogue River – Raygold	92	80

\*Observed runoff adjusted for changes in upstream storage





# Water Supply Forecast Inputs

- **Observed Conditions:**

- Precipitation
- Temperature
- Snowpack
- Runoff

Hydrologic  
model states

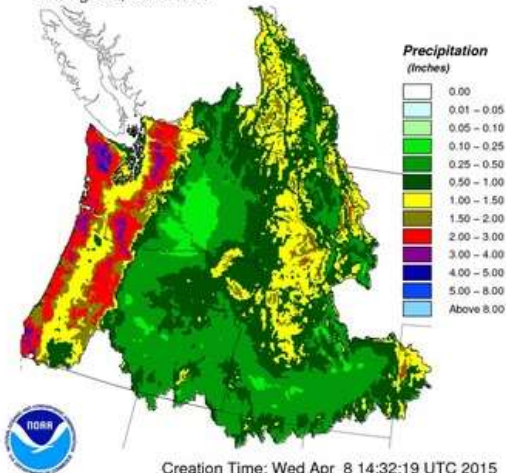
- **Future Conditions:**

- 10 days of quantitative forecast precipitation (QPF)
- 10 days of quantitative forecast temperature (QTF)
- Historical observations appended thereafter

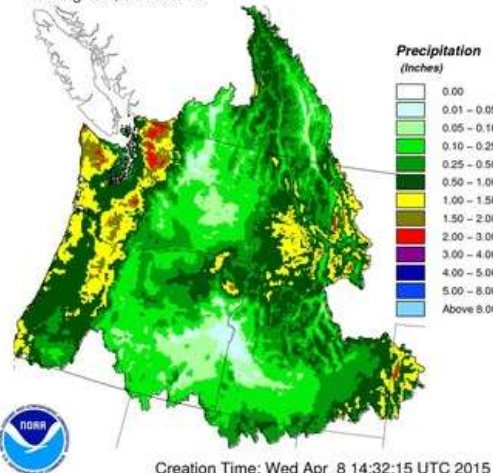
# Precipitation & Temperature Forecasts

## 10 Day Forecast Precipitation: Volume Analysis

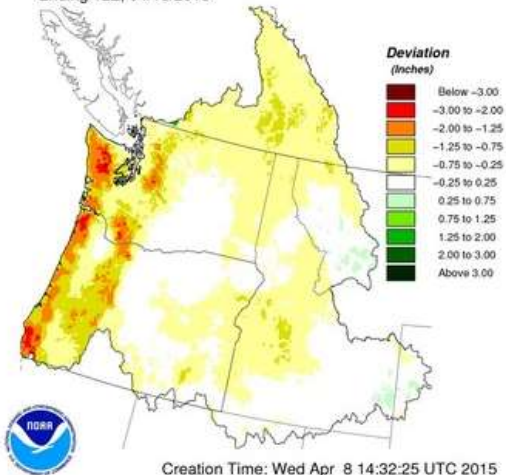
10 Day Precipitation Climatology  
Ending 12Z, 04/18/2015



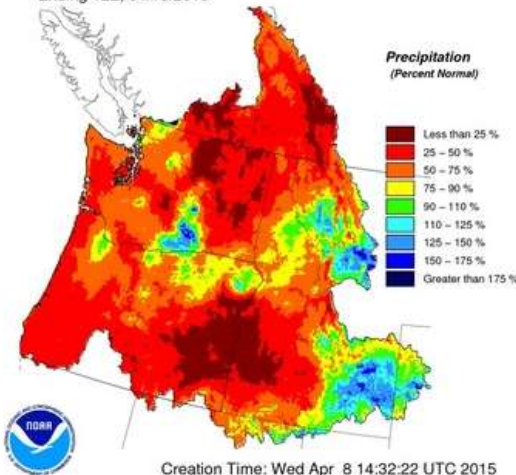
10 Day QPF  
Ending 12Z, 04/18/2015



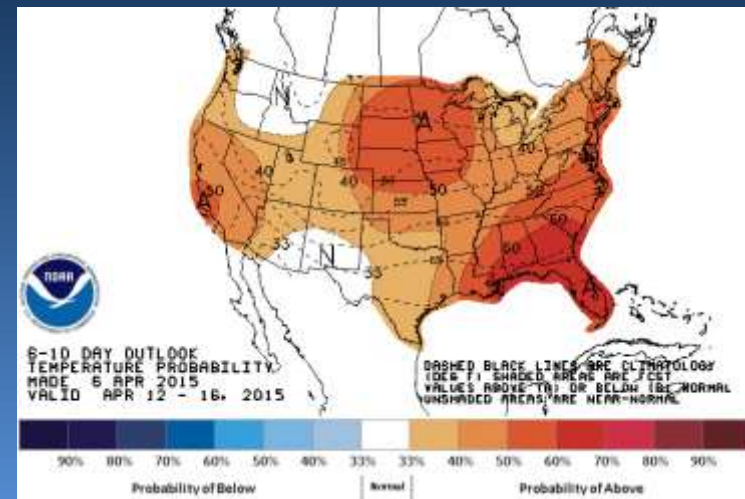
10 Day QPF (Deviation from Climatology)  
Ending 12Z, 04/18/2015



10 Day QPF (Percent of Climatology)  
Ending 12Z, 04/18/2015



- Relatively dry conditions forecasted through mid-April
- First several days of April have been relatively cold, but warmer conditions are expected
- Likely will see continued snowpack declines







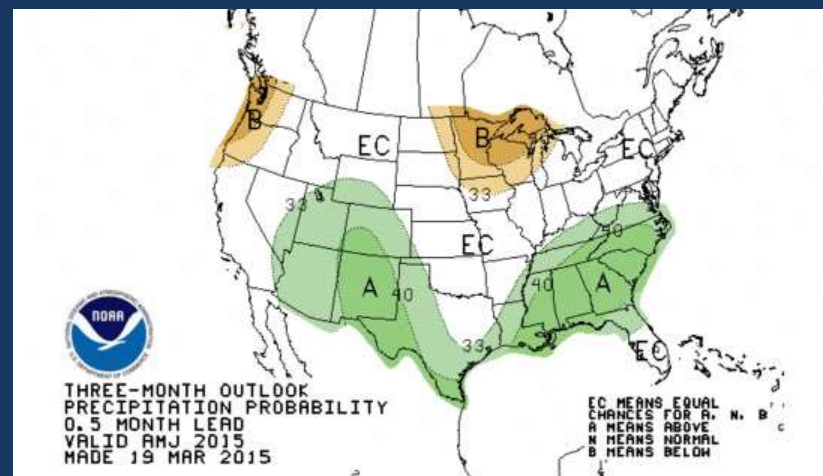
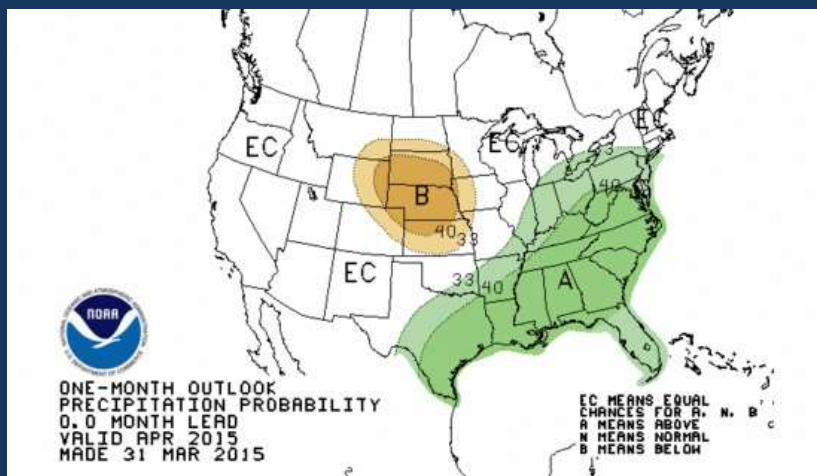
# Climate Outlook



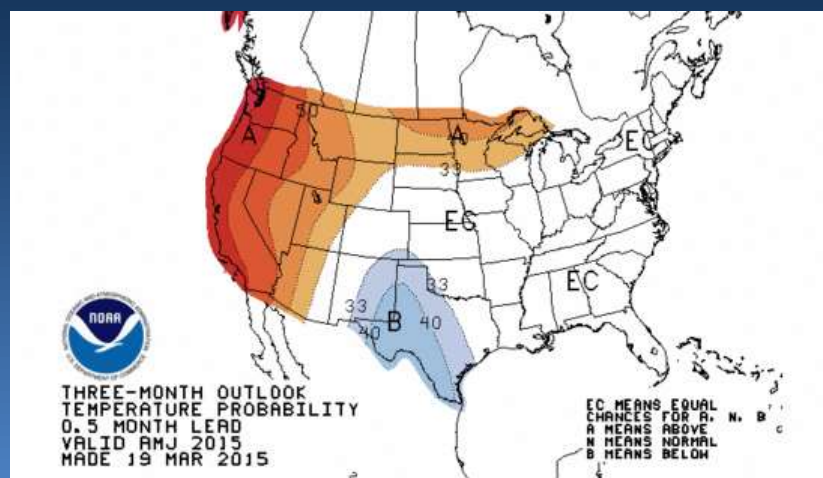
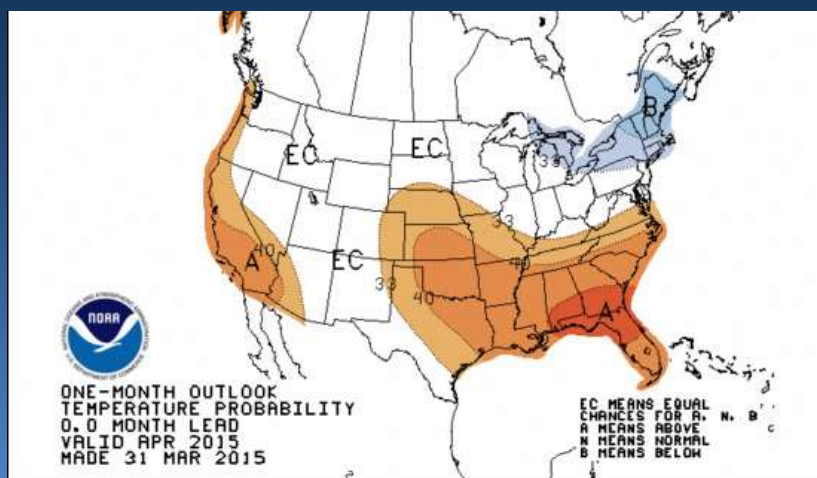
## Current Month Outlook

## Three Month Outlook

Precipitation



Temperature









# Columbia River – The Dalles Dam



## COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2015

### Official Forecast

10 days QPF: Ensemble: 2015-04-08 Issued: 2015-04-08

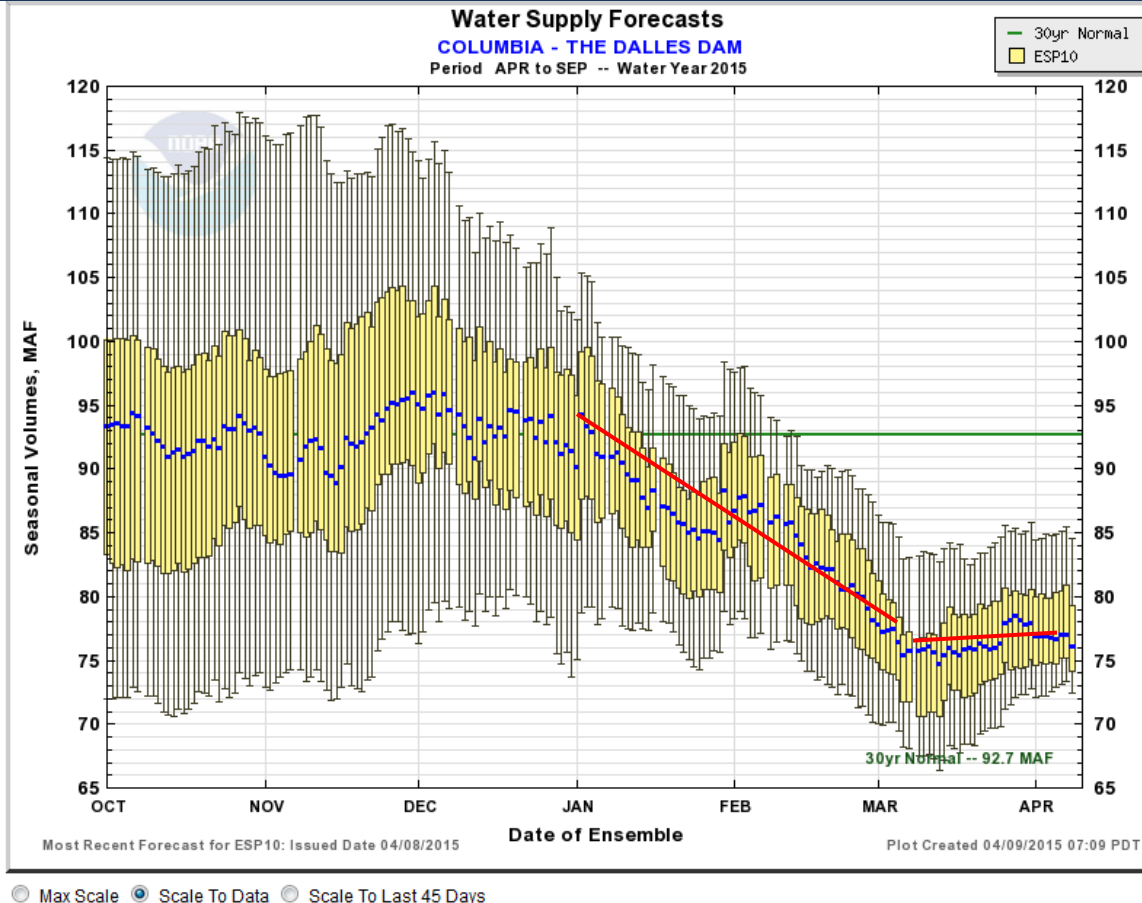
Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	72405	76064	82	84595	92704
APR-JUL	59887	63851	80	71769	79855
APR-AUG	67582	71253	81	79110	87532
JAN-SEP	102974	106633	93	115164	114216
JAN-JUL	90456	94420	93	102338	101368
OCT-SEP	121477	125136	96	133667	130518

5 days QPF: Ensemble: 2015-04-08 Issued: 2015-04-08

APR-SEP	72760	77308	83	85464	92704
APR-JUL	60408	65436	82	73799	79855
APR-AUG	67986	72233	83	80168	87532
JAN-SEP	103329	107877	94	116033	114216
JAN-JUL	90977	96005	95	104368	101368
OCT-SEP	121832	126380	97	134536	130518

0 days QPF: Ensemble: 2015-04-08 Issued: 2015-04-08

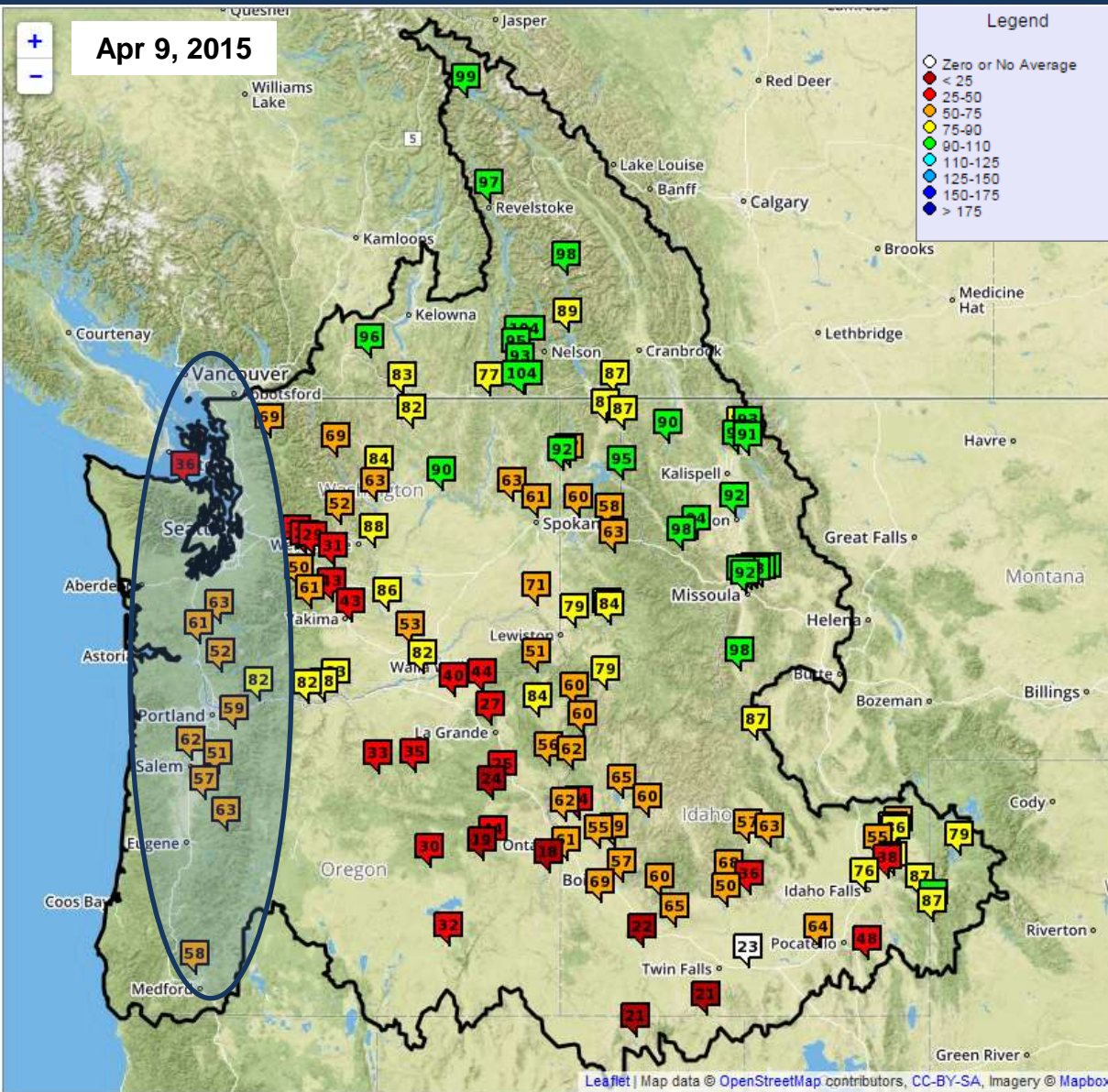
APR-SEP	73155	79048	85	85899	92704
APR-JUL	61020	66027	83	74649	79855
APR-AUG	68102	73462	84	81063	87532
JAN-SEP	103725	109617	96	116469	114216
JAN-JUL	91590	96596	95	105219	101368
OCT-SEP	122227	128120	98	134971	130518



90% -> 9 in 10 chance of volume being exceeded (quite likely)  
10% -> 1 in 10 chance of volume being exceeded (a possibility)  
50% -> 5 in 10 chance of volume being exceeded (most likely)



# Official Water Supply Forecasts



## LOCATION

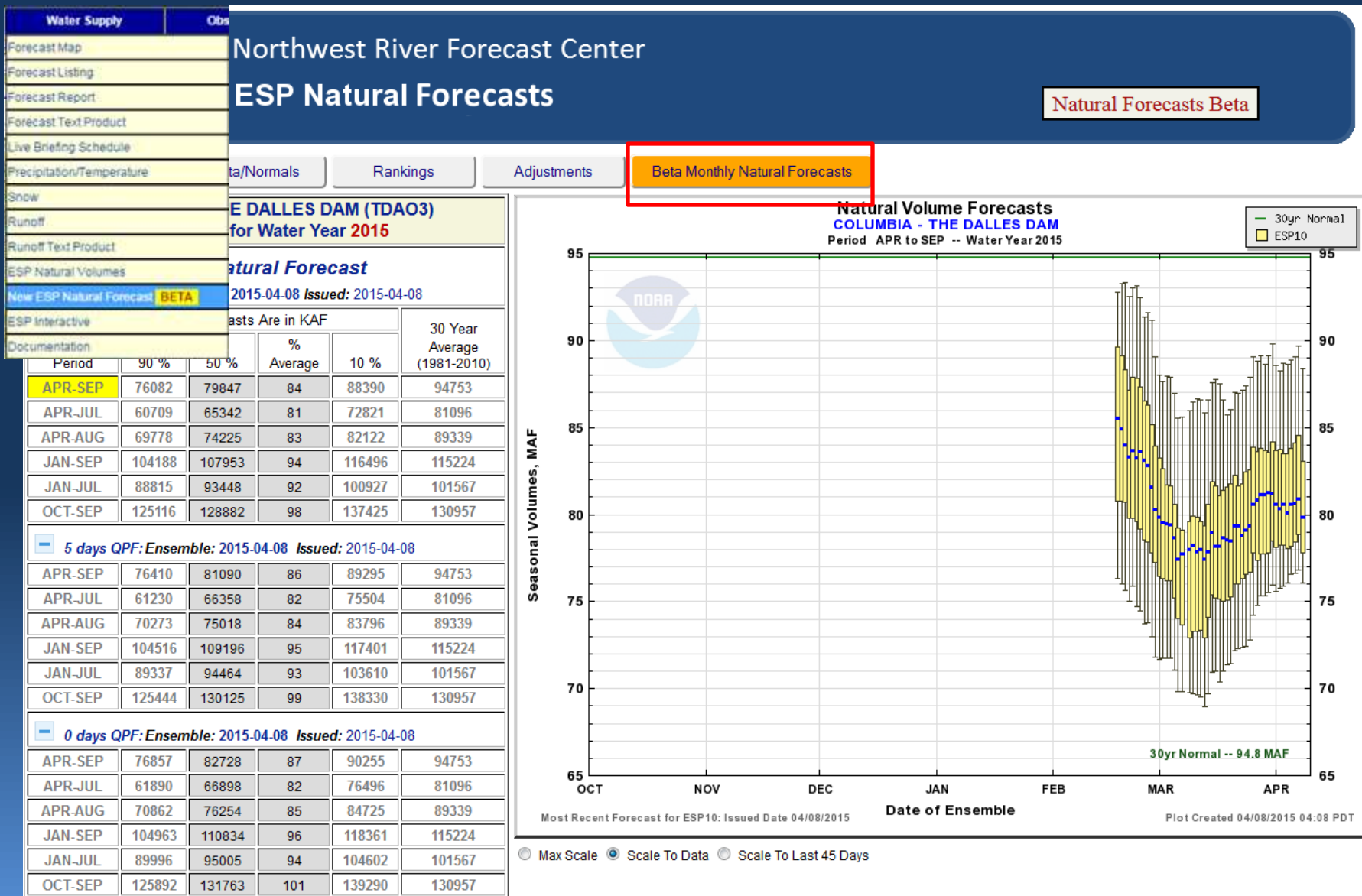
APR – SEP %  
NORM

Skagit River – Concrete	69
Dungeness River – Sequim	36
Cowlitz River – Castle Rock	61
Lewis River – Merwin Dam	52
Rogue River – Raygold	58
McKenzie River – Vida	63
South Santiam River – Waterloo	57
North Santiam River – Mehama	51
Willamette River – Salem	62
Clackamas River – Estacada	59



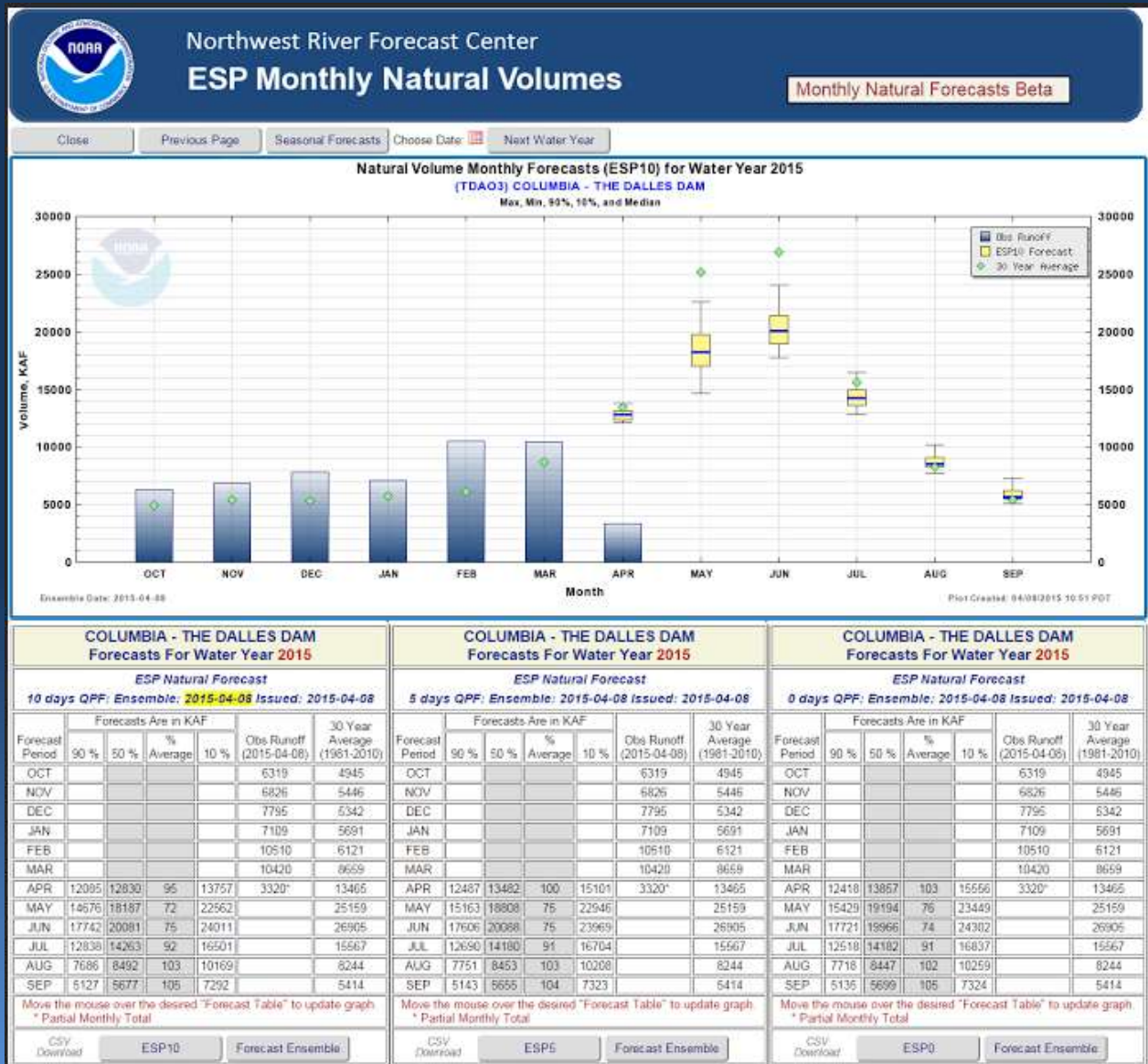


# New Water Supply Webpage





# New Water Supply Webpage







# NWRFC Water Supply Webpage

[www.nwrfc.noaa.gov/ws/](http://www.nwrfc.noaa.gov/ws/)

2015 Schedule for Live Water Supply Briefings					
Jan	Feb	Mar	Apr	May	Jun
8	5	5	9	7	TBD
<i>All presentations held at 10am PDT/PST, unless noted otherwise</i>					
<a href="#">Click here for Registration Information</a>					
<a href="#">Archive of Previous Briefings</a>					

[www.nwrfc.noaa.gov/water\\_supply/ws\\_schd.cgi](http://www.nwrfc.noaa.gov/water_supply/ws_schd.cgi)

Kevin Berghoff, Taylor Dixon, NWRFC  
W-ptr.Webmaster@noaa.gov  
(503) 326-7291



# April 2015 Water Supply Briefing

National Weather Service, Northwest River Forecast Center

## Questions?

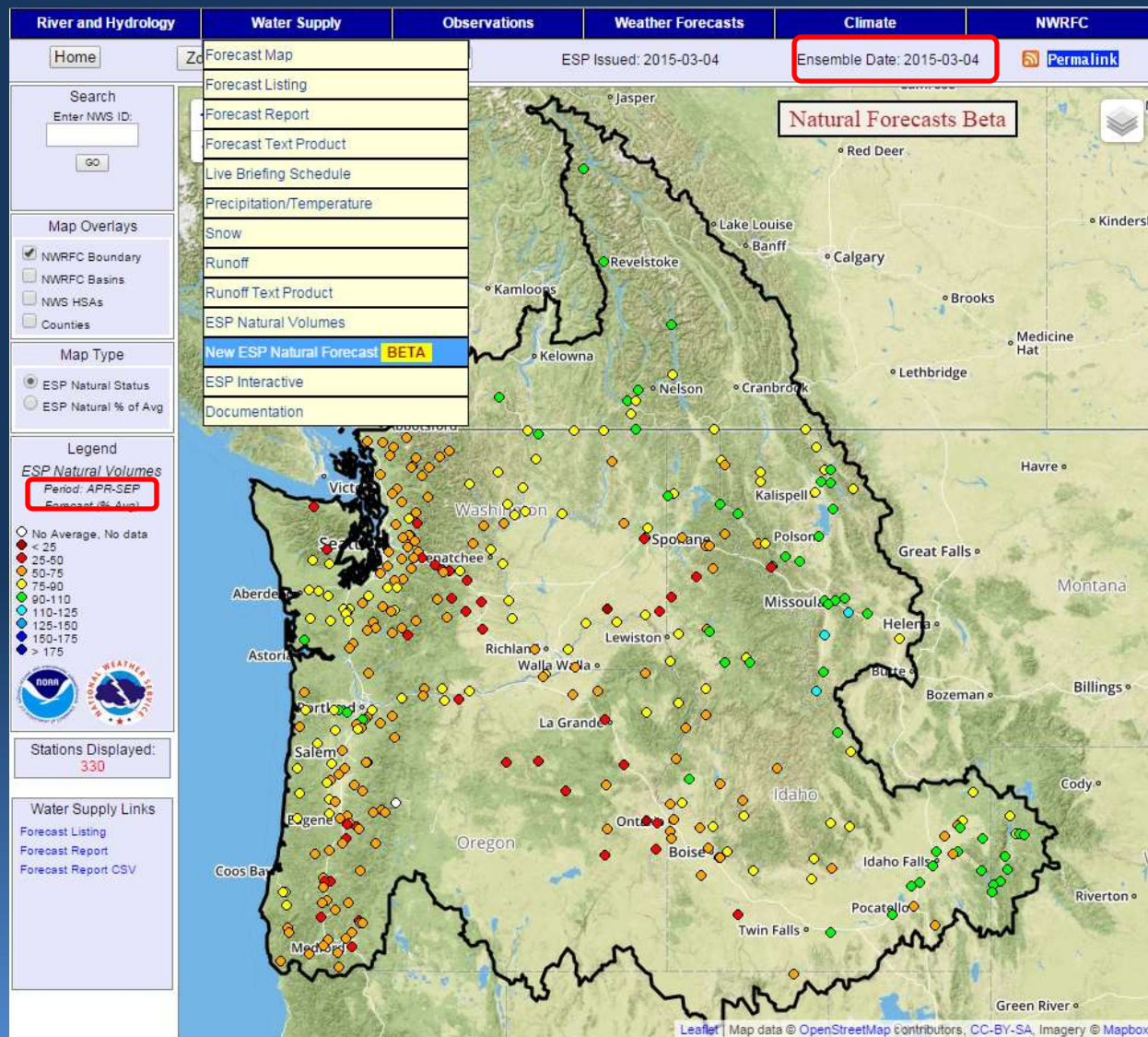
Presentation available after brief at:  
[www.nwrfc.noaa.gov/presentations/presentations.cgi](http://www.nwrfc.noaa.gov/presentations/presentations.cgi)

Kevin Berghoff, Taylor Dixon, NWRFC  
W-ptr.Webmaster@noaa.gov  
(503) 326-7291





# New Natural Volume Forecasts



- Incorporates new naturalized observed runoff
  - No volume period restrictions
  - Verification now possible
- Same look and feel as traditional water supply forecast products
  - Will be adding more volume periods to both, namely monthly periods